## Introduction

For any woman all over the world, menstruation, pregnancy and menopause are major bodily events in life. Amongst all these, women suffering from menstrual disorders are countless. Premenstrual stress, tension or syndrome is one of the controversial disorders related to menses which is yet considered to be a vague concept in medical science. Premenstrual syndrome (PMS) affects 90% of women of reproductive age all over the world.

The female reproductive system consists of a pair of ovaries, pair of fallopian tubes, a uterus and a vagina. The monthly sexual cycle of a female can be divided into two major cycles – ovarian cycle (for formation of ovum) and uterine cycle (for formation / breaking of endometrium). When there is no fertilization, uterine endometrial walls break. This monthly vaginal bleeding coming at the interval of 28 days is menstruation. The universal first menarcheal age for this is 13 years. The menstrual cycle can be divided into 4 phases : Menstrual phase of 4 days, Proliferative phase of 10 days, Secretory phase of 11 days and Regressive phase of 3 days (Farrer,1987)

**In every woman, a few days before the approach of menses, mild subjective and objective changes occur, but when, during the week or ten days before the menses these changes are exaggerated, this is termed PMS** (Masani, 1982). PMS is a combination of emotional, physical, psychological and mood disturbances that occurs after a woman's ovulation and normally ends with the onset of her menstrual flow (www.medicinenet.com).

Premenstrual Dysphoric disorder (PMDD) is a more severe form of PMS which affects almost 5% of women during their reproductive years. **PMDD is the extreme, predominantly psychological end of PMS spectrum** (O' Brien *et al*., 2003; Shaw, 2003). Change in appetite, irritability, insomnia, feeling of hopelessness, anxiety, depression, lethargy, feeling of out of control, decreased interest in usual activities and mood swing are the common diagnostic symptoms of PMDD that interfere in the daily life of these sufferers to a very great extent.

Traditionally it was thought that PMS affects multiparous middle class articulate women in their late 30s & 40s (Shaw et al., 2003). The pioneer researcher in the field of PMS, Katherine Dalton argues PMS to be responsible for increased

incidences of crime, jailing for alcoholism & prostitution, school misdemeanors, sickness in industry, hospitalization for accidents, psychiatric disorders & general hospital admission.

The most common symptoms of PMS are divided into four subgroups (Abraham, 1983; Abraham and Rumley, 1987). These can occur singly or in combination with other subgroups and are characterized by typically occurring symptoms. Even though the concept of defining sub groups of PMS based on symptom patterns is appealing, at the present time there is no evidence to suggest that these subgroups represent different etiologies or different pathophysiological mechanisms. These are:

**1) PMS-A (Anxiety):** wherein anxiety, irritability, mood swings and nervous tension are the main responsible symptoms.

**2) PMS- C (Carbohydrates or Craving):** sugar craving specially chocolates or ice-cream, palpitation, fatigue, headache, dizziness are the chief symptoms.

**3) PMS- H (Hyper hydration):** Here, bloating and tenderness, weight gain, breast congestion and mastalgia and occasionally edema of face and extremities are considered.

**4) PMS- D (Depression):** When depression, confusion, memory loss, suicidal thoughts, lethargy are the major factors, patient is considered to be of this subgroup.

Recent scientific studies have shown the presence of more than 160-200 symptoms associated with PMS. These are broadly classified into Physical, psychological & behavioural symptoms (Dickerson et al., 2003). It is a psycho-neuro-endocrine disorder of unknown etiology. Because of this, most of the treatments given to sufferers are symptomatic.

## Aim of the present study

Present study focused on analyzing prevalence of PMS, its intensity in various age groups, which symptoms are experienced & how much, finding possible causes responsible for such a state & trend of presently available treatments. Study focuses on understanding whether any hormonal changes occur during PMS. Study also aimed to suggest appropriate remedies or tips to prevent this problem.

## Methodology

**1) Sample:**

Study sample consisted of 720 females from 24 age groups of 13 to 36 years from different areas of Surat, Gandhinagar & Ahmedabad. For each age group 30 subjects were surveyed. Out of 720 respondents, 362 were unmarried girls whereas 358 were married. Out of which 293 were students, 245 house wives, 177 were working women & 5 were unmarried girls not doing any job. Only 6 respondents were illiterate while all others had minimum primary education. 565 respondents were vegetarians, 122 non-vegetarians while 33 were egg-vegetarians. 630 subjects had regular menstrual cycle while 90 were with irregular cycles.

During the study, majority subjects were found to be healthy, but there were 5 with thyroid problems, 5 with uterine fibroids & 3 with polycystic ovary disorder (PCOD). None of the subject was found to be suffering from any severe illness or undergoing some major treatment or medication.

**2) Tools:**

After proper analysis of already available literature a questionnaire was designed wherein health profile, menstrual details, PMS symptoms, family & socio-economic details etc., of the subjects were noted. They were also assessed through a premenstrual assessment form (PAF \ rating scale) given by Allen *et al.,* 1991 for more intensive study on PMS symptoms.

A short Proforma of 8 questions was made for Doctors, Mothers & Teachers specifically to acquire prevailing trends of treatment, to know the approach, attitude, taboos, myths, etc. related to PMS as they deal with such cases more closely in one or the other way.

**3) Procedure:**

A random survey was conducted in various areas of Surat, Gandhinagar & Ahmedabad wherein subjects were personally interrogated with their prior concern & all the information was noted in the questionnaire. Questionnaire was mainly divided into major six subtitles namely General profile, family details, marital details, menstrual details, dietary information & PMS Symptoms to obtain thorough information about the respondents.

One sixth of the study sample (120 subjects) was followed up thrice to study prevalence of same or different PMS symptoms. Also around one fifth of the study sample (150subjects) were asked to rate the symptoms in rating scale of Allen *et al*, 1991.

From these 720 respondents, 60 respondents went through Blood tests & Lower abdomen Sonography prior to their expected dates of menses for study of hormonal impact & anatomical changes during PMS. Complete Haemogram, Thyroid Panel (T3, T4 & TSH hormones), Estradiol, Progesterone, FSH (Follicle stimulating hormone), LH (leutinising hormone) levels in blood were checked with the help of Professional Pathological laboratory of international standards based at Surat namely Desai Metropolis Chain of Laboratories. Sonographies were also done by experienced Radiologists based at Surat.

Necessary statistical tools were applied to make the data error free and to get precise results. Around 50 Doctors (Endocrinologists, Gynecologists, Homeopaths, Ayurveda Practitioners, Alternative therapists etc) & 50 Mothers - Teachers were also interrogated & consulted to gain realistic overview of PMS, understand their point of view on PMS, approach of medication, patients' complaints, attitudes etc.

## Limitations & experiences of the Investigator

As the present study largely depends on the response, experience & understanding of the subjects, a low degree of error may be present which is avoidable. It was found that respondents were not much difficult to convince for the personal interviews but most of them has an attitude to bear such PMS problems & leave it unnoticed. Also it was little tuff as a researcher to do follow up of subjects for 3 menstrual cycle to note their premenstrual problems. Many respondents were quite hesitant to undergo sonography & blood tests.

## Results & Discussion

In present study, 94.02% (677/720) subjects showed one or more physical symptoms out of 28 PMS symptoms, while 5.97% (43/720) denied suffering any such physical problems during premenstrual days. Similarly, 80.27% (578/720) subjects suffered one or more psychological- behavioural symptoms out of 28 psychological PMS symptoms undertaken here & 19.72% (142/720) showed none of these symptoms. Only 4.03% (29/720) subjects were noted to have no physical & psychological- behavioural

symptoms in prior to their menses days. Thus 95.97% (691/720) respondents were suffering from Premenstrual Syndrome in variable degrees of severity.

Amongst the physical problems, Backache (BA) 53% (360/677), Lower abdominal cramps (LAC) 48.30% (327/677) & Dizziness (DZ) 24% (163/677) were the major complaints of respondents. Full leg pain, Acne, Knee joint pain, Weakness, Decreased Appetite etc., were observed in moderate intensity while exacerbation, constipation, indigestion, darkening of skin, etc were seen least.

Symptoms like Irritability (IRB) 56% (324/578), Anger (Ar) 52% (300/578), lack of interest (LIN) 50.69% (293/578), confusion (CF) 39.79% (230/578), Want to remain alone (WRL) 29.58% (171/578) etc., were found to be the most severe psychological problems during PMS in the respondents. Anxiety, less tolerance to light, tension, cry spell etc. were noted to be moderate while hypersensitivity, palpitation, disturbed sleep, decreased food craving etc., were less observed as PMS symptoms. All the 56 symptoms, subgroups of PMS, co-relation of PMS symptoms & factors behind these are discussed at length in the thesis.

None of the subjects out of 60 who underwent blood test & sonography showed any thyroid related problems. Also results do not show any striking relationship between hormonal changes & rise in PMS symptoms. Sonography results clearly indicated an increase endometrial thickness, which is obvious during PMS days. Further in-depth analysis is mentioned in the thesis.

From the analysis of results of rating scale of Allen et al.1991, there was further assurance that PMS does occur in more than 50% of the study subjects. The score for symptoms like irritability, lower abdominal cramps, mastalgia, weight gain etc. was found to be high, while feeling bloated, water retention etc. ranked low.

It is said that the symptoms experienced during PMS vary every time during each menstrual cycle & also that their severity is variable. This was very relevant to our present study. It was clearly observed when PMS physical & psychological symptoms were studied during 3 menstrual cycles of each 120 subjects. This indicates that factors like physical & mental stress, routine, domestic affairs of life etc. also have an impact on increase or decrease of PMS.

From the interaction with doctors, mothers & teachers, it was found that mostly symptomatic treatments are suggested to those who complain of various PMS problems. Symptoms like back pain, abdominal cramps, loss of appetite, increased sleep, lethargy, mood swing, irritability, etc were commonly heard & observed by them.

Doctors have emphatically suggested exercise & dietary changes to prevent such problems. According to doctors, mothers & teachers; maladjustment, lifestyle & food habits are the main cause for PMS.

## Conclusion

Thus the present study indicates clearly that PMS does exist in variable quantum & is an affecting factor of women's life. Many interesting results related to physical, psychological-behavioural symptoms, dietary habits etc., of different subjects were found during this study, which are mentioned in detail in the thesis. Further outcomes are discussed in the form of tabulations, graphical presentations, statistical analysis etc., in the thesis. During the survey & study of Premenstrual Syndrome, lack of awareness was found notably. To overcome this, a website was designed & is launched to help women globally fight against PMS & its related problems. Some suggestive tips are also mentioned in the concluding part of this present study.

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